Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method of operating an image matching apparatus including instructions, the method comprising:

    (a)   causing a processor to execute the instructions to perform position correction processing to a first image and a second image, the first image including: (i) first points; and (ii) first linear components, the second image including: (i) second points; and (ii) second linear components;

    (b)   after performing the position correction processing, causing the processor to execute the instructions to transform:

        (i)   the first points of the first image and the second points of the second image to a curved pattern; and

        (ii)   the first linear components of the first image and the second linear components of the second image to a plurality of overlapped curved-patterns, said transformation being based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing though the reference position and the shortest point and a reference axis including the reference position;

    (c)   causing the processor to execute the instructions to generate a first transformed image and a second transformed image; and

    (d)   causing the processor to execute the instructions to match the first image and the second image based on a degree of an overlap of the patterns in the first transformed image and the second transformed image and a matching or mismatching of the patterns in the first and second transformed images.

Claim 2 (previously presented): The method of claim 1, which includes:

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(a)   causing the processor to execute the instructions to extract regions each of which indicates a degree of the overlap of the curved patterns in the transformed image equal to or greater than a threshold set in advance, from the first transformed image and the second transformed image; and

(b)   causing the processor to execute the instructions to match the first image and the second image based on the matching or mismatching of the patterns in the regions extracted from the first transformed image and the second transformed image respectively.

Claim 3 (previously presented):   The method of claim 2, which includes causing the processor to execute the instructions to determine the threshold based on a size of the extracted region such that the size of the extracted region is larger than the set value.

Claim 4 (previously presented): The method of claim 2, which includes causing the processor to execute the instructions to determine the threshold based on the size of the extracted region such that the size of the extracted region is within the set value.

Claim 5 (previously presented): The method of claim 2, which includes causing the processor to execute the instructions to delete the image when the size of the extracted region is less than the set value.

Claim 6 (previously presented): The method of claim 1, which includes causing the processor to execute the instructions to perform Hough transform processing to the first image and the second image to generate the first transformed image and the second transformed image.

Claim 7 (previously presented): The method of claim 1, which includes:

(a)   causing the processor to execute the instructions to perform comparison processing to a plurality of different positional relationships in the first transformed image and the second transformed image;

(b)   causing the processor to execute the instructions to generate a similarity as a correlation value based on a result of the comparison processing; and

(c)   causing the processor to execute the instructions to match the first image and the second image based on the generated similarity.

Claim 8 (canceled).

Claim 9 (previously presented): The method of claim 1, which includes:

(a)   causing the processor to execute the instructions to generate a correlation value based on a phase component which is a result of a rotation angle correction processing or an enlargement ratio correction processing and the Fourier transform processing to the first image and the second image; and

(b)   causing the processor to execute the instructions to perform the position correction processing to the first image and the second image based on the generated correlation value.

Claim 10 (previously presented): The method of claim 1, which includes:

(a)   causing the processor to execute the instructions to generate a plurality of the correlation values indicating a corrected position by a correlation processing to the first image and the second image;

(b)   causing the processor to execute the instructions to perform a plurality of the position correction processing to the first image and the second image based on the generated correlation values;

(c)   causing the processor to execute the instructions to perform image processing to the results of the plurality of the position correction processing of the first image and the second image in the position correction step to generate the first transformed image and the second transformed image;

(d)   causing the processor to execute the instructions to generate the correlation value based on the patterns in the first transformed image and the second transformed image; and

(e)   causing the processor to execute the instructions to match the first image and the second image based on the generated correlation value and the threshold set in advance.

Claim 11 (previously presented): The method of claim 10, which includes causing the processor to execute the instructions to match the first image and the second image to the result

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of the plurality of the position correction processing based on the total amount of the correlation value corresponding to different positions and the threshold set in advance.

Claim 12 (canceled).

Claim 13 (previously presented): An image matching apparatus comprising:

a processor;

a memory device storing instructions, which when executed by the processor, cause the processor to:

(a)   perform a position correction processing to a first image and a second image, the first image including: (a) first points; and (b) first linear components, the second image including: (a) second points; and (b) second linear components;

(b)   after performing the position correction processing, transform:

     (i)   the first points of the first image and the second points of the second image to a curved pattern; and

     (ii)   the first linear components of the first image and the second linear components of the second image to a plurality of overlapped curved-patterns, said transformation being based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing though the reference position and the shortest point and a reference axis including the reference position, and

(c)   generate a first transformed image and a second transformed image; and

(d)   match the first image and the second image based on a degree of an overlap of the patterns in the first transformed image and the second transformed image and a matching or mismatching of the patterns in the first and second transformed images.

Claim 14 (previously presented): The image matching apparatus of claim 13, wherein when executed by the processor, the instructions cause the processor to:

(a)　extract a region where the degree of the overlap of the curved patterns in the transformed image is equal to or greater than a threshold set in advance, from the first transformed image and the second transformed image; and

(b)　match the first image and the second image based on the matching or mismatching of the patterns in the extracted regions from the first transformed image and the second transformed image respectively.

Claim 15 (previously presented): The image matching apparatus of claim 14, wherein when executed by the processor, the instructions cause the processor to determine the threshold based on a size of the extracted region so as to be larger than the set value.

Claim 16 (previously presented): The image matching apparatus of claim 14, wherein when executed by the processor, the instructions cause the processor to determine the threshold based on the size of the extracted region so as to be within the set value.

Claim 17 (previously presented): The image matching apparatus of claim 14, wherein when executed by the processor, the instructions cause the processor to delete the image when the size of the extracted region is equal to or less than the set value.

Claim 18 (previously presented): The image matching apparatus of claim 13, wherein when executed by the processor, the instructions cause the processor to perform a Hough transform processing to the first image and the second image to generate the first transformed image and the second transformed image.

Claim 19 (previously presented): The image matching apparatus of claim 13, wherein when executed by the processor, the instructions cause the processor to:

(a)　perform a comparison processing to a plurality of different positional relationships in the first transformed image and the second transformed image;

(b) generate a similarity as a correlation value based on a result of the comparison processing; and

(c) perform the matching of the first image and the second image based on the generated similarity.

Claim 20 (canceled).

Claim 21 (previously presented): The image matching apparatus of claim 13, wherein when executed by the processor, the instructions cause the processor to:

(a) generate a correlation value based on a phase component which is a result of a rotation angle correction processing or an enlargement ratio correction processing and the Fourier transform processing to the first image and the second image; and

(b) perform the position correction processing to the first image and the second image based on the generated correlation value.

Claim 22 (previously presented): The image matching apparatus of claim 13, wherein when executed by the processor, the instructions cause the processor to:

(a) generate a plurality of the correlation values each indicating a corrected position by a correlation processing based on the first image and the second image;

(b) perform a plurality of the position correction processing to the first image and the second image based on the generated correlation value;

(c) perform image processing to the results of the plurality of the position correction processing of the first image and the second image to generate the first transformed image and the second transformed image;

(d) generate the correlation value based on the patterns in the first transformed image and the second transformed image and

(e) perform the matching of the first image and the second image based on the generated correlation value and the threshold set in advance.

Claim 23 (previously presented): The image matching apparatus of claim 22, wherein when executed by the processor, the instructions cause the processor to perform the matching of the first image and the second image to the result of the plurality of the position correction processing based on the total amount of the correlation value corresponding to different positions and the threshold set in advance.

Claim 24 (canceled).

Claim 25 (currently amended): A non-transitory computer readable medium storing a computer readable program structured to cause an apparatus to:

(a)   perform a position correction processing to a first image and a second image, the first image including: (i) first points; and (ii) first linear components, the second image including: (i) second points; and (ii) second linear components;

(b)   after performing the position correction processing, transform:

(i)   the first points of the first image and the second points of the second image to a curved pattern; and

(ii)   the first linear components of the first image and the second linear components of the second image to a plurality of overlapped curved-patterns, said transformation being based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing though the reference position and the shortest point and a reference axis including the reference position;

(c)   generate a first transformed image and a second transformed image; and

(d)   match the first image and the second image based on a degree of an overlap of the patterns in the first transformed image and the second transformed image and a matching or mismatching of the patterns in the first and second transformed images.

Claim 26 (currently amended): The non-transitory computer readable medium of claim 25, wherein the instructions are further structured to cause the apparatus to:

    (a)   extract regions each of which indicates a degree of the overlap of the curved patterns in the transformed image equal to or greater than a threshold set in advance, from the first transformed image and the second transformed image;

    (b)   match the first image and the second image are carried out based on the matching or mismatching of the patterns in the regions extracted from the first transformed image and the second transformed image respectively.

Claim 27 (currently amended): The non-transitory computer readable medium of claim 26, wherein the instructions are further structured to cause the apparatus to determine the threshold based on a size of the extracted region such that the size of the extracted region is larger than the set value.

Claim 28 (currently amended): The non-transitory computer readable medium of claim 26, wherein the instructions are further structured to cause the apparatus to determine the threshold based on the size of the extracted region such that the size of the extracted region is within the set value.

Claim 29 (currently amended): The non-transitory computer readable medium of claim 26, wherein the instructions are further structured to cause the apparatus to delete the image when the size of the extracted region is equal to or less than the set value.

Claim 30 (currently amended): The non-transitory computer readable medium of claim 25, wherein the instructions are further structured to cause the apparatus to perform Hough transform processing to the first image and the second image to generate the first transformed image and the second transformed image.

Claim 31 (currently amended): The non-transitory computer readable medium of claim 25, wherein the instructions are further structured to cause the apparatus to:

    (a)   perform a comparison processing to a plurality of different positional relationships in the first transformed image and the second transformed image;

    (b)   generate a similarity as a correlation value based on a result of the comparison processing; and

    (c)   match the first image and the second image based on the generated similarity.

Claim 32 (canceled).

Claim 33 (currently amended): The <u>non-transitory</u> computer readable medium of claim 25, wherein the instructions are further structured to cause the apparatus to:

    (a)   generate a correlation value based on a phase component which is a result of a rotation angle correction processing or an enlargement ratio correction processing and the Fourier transform processing to the first image and the second image; and

    (b)   perform the position correction processing to the first image and the second image based on the generated correlation value.

Claim 34 (currently amended): The <u>non-transitory</u> computer readable medium of claim 25, wherein the instructions are further structured to cause the apparatus to:

    (a)   generate a plurality of the correlation values each indicating a corrected position by a correlation processing based on the first image and the second image;

    (b)   perform a plurality of the position correction processing to the first image and the second image based on the generated correlation value;

    (c)   perform image processing is performed to the results of the plurality of the position correction processing of the first image and the second image to generate the first transformed image and the second transformed image;

    (d)   generate the correlation value based on the patterns in the first transformed image and the second transformed image; and

(e) perform the matching of the first image and the second image based on the generated correlation value and the threshold set in advance.

Claim 35 (currently amended): The <u>non-transitory</u> computer readable medium of claim 34, wherein the instructions are further structured to cause the apparatus to perform the matching of the first image and the second image to the result of the plurality of the position correction processing based on the total amount of the correlation value corresponding to different positions and the threshold set in advance.

Claim 36 (canceled).